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| Male Producers | Female Producers | Male Producers | Female Producers |
|----------------|------------------|----------------|------------------|
| 120 | 1 | 229 | 0 |
| 23 | 8 | 390 | 14 |
| 331 | 105 | 185 | 0 |
| 32 | 1 | 127 | 0 |
| 106 | 2 | 219 | 29 |
| 152 | 177 | 209 | 9 |
| 291 | 0 | 0 | 328 |
| 240 | 0 | 3 | 386 |
| 323 | 3 | | |

case only female producers. When it is recalled that all the descendants can be traced to a single egg fertilized by a "female-producing" sperm the results are significant. It is obvious that while the sex of the fertilized egg is connected with the "female-producing" sperm, the subsequent progeny may be either males or females or a mixture of both. Either external conditions determine the result (for which there is no evidence), or else there is a strong "prepotency" of the egg or sperm in one or the other direction.

When it is recalled that the division into male layers and female layers takes place one generation prior to the formation of the sexes, it will be manifest that the conditions that determine the proportion of males and females, *i. e.*, sex-determining factors, are to be sought in a mechanism that lies behind the one that excludes two chromosomes from the male egg.

Equally important is the fact that in the latter process of elimination the result is not haphazard, for the eliminated chromosomes always pass into the polar body of the male egg. Since we can identify this egg before the elimination, we know that we are dealing here also with an ordered series of events, and not with an accidental shifting of chromosomes into one or another cell.

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MOMENTUM EFFECTS IN ELECTRIC DISCHARGE

IN SCIENCE of July 17 and December 4, the writer has given some account of experiments which seem to indicate momentum effects, in electrical discharges around a right angle in a wire. One interesting feature of

the work was the formation of shadow pictures of thin glass slides upon which lines had been scratched. At the Baltimore meeting of the American Association for the Advancement of Science, a series of these pictures was shown, some of which were of special interest.

A sheet of hard rubber one sixteenth of an inch in thickness was pierced with a large number of holes of various diameters. This sheet was laid upon the photographic film within a hard rubber holder. The wire angle from which the fogging effects came was just above the cover, and about 5 mm. from the film. The holder rested upon a sheet of glass, 2 or 3 cm below, which was a grounded metal plate. The film was more strongly fogged at the bases of the larger holes than at those of the smaller ones. The electrons were apparently deflected to the sides of the smaller holes to such an extent that few of them reached the film at the bottom. Holes directly below the wire gave images with sharp outline. Those to one side gave images having on the sides remote from the wire diverging lines indicating the repulsion of the accumulating electrons on the film by the wire above, and their repulsion for each other. The comparison of such shadow images with those made by light shining through the same holes showed differences of a very marked character.

Another interesting shadow picture made just before leaving home, was produced by replacing the pierced rubber plate by small fibers of glass, laid on the film at right angles to the wire above. These fibers were about half a millimeter in diameter. Some of them were hollow tubes and some were solid. The tubes gave shadows of uniform density. The solid fibers showed conclusive evidence of refraction. In every case the shadow image shows a sharp black line along its center, where the fiber made contact with the film.

Wood, of Johns Hopkins University, suggested that this might indicate the presence of high frequency ether waves, and suggested the use of red or yellow glass, with the other glass fibers.

On returning home Wood's suggestion was carried out. After many attempts two fibers of glass, the one of colorless and the other of red sealing in glass, each having the same diameter, were prepared. This diameter was 0.079 cm. The red glass gave a slightly less sharply defined focal line. There is little if any absorption. By pushing the exposure, diverging discharge lines were shown at either end of the block focal line. This gives unmistakable evidence of the action of negative electrons.

On using a red rod of diameter 0.420 cm. the shadow picture showed white along the line of contact with the film. The absorption was then complete.

FRANCIS E. NIPHER

SOCIETIES AND ACADEMIES

THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

THE 422d regular meeting, on October 13, 1908, was addressed by Major Charles E. Woodruff, surgeon, U. S. A., on "Anthropological Studies on the Effects of Light."

Major Woodruff briefly reviewed the various advances which have been made in the study of the effect of light on organisms. He gave special attention to the value of light in the treatment of tuberculosis. It was thought, said Dr. Woodruff, that fresh air, good food and abundance of light, were the three most beneficial things in the treatment of this disease. He had reached the conclusion that the last factor was harmful, and that the success of certain cloudy regions was due to the lesser degree of light; and that brilliant deserts increased the mortality to an alarming extent.

The paper was discussed by Professor McGee, Dr. Hrdlička, Dr. Lamb and others.

THE 423d regular meeting, on November 10, 1908, was a memorial meeting for Professor Otis Tufton Mason, of the National Museum, whose death occurred on November 5. Appropriate remarks on his life and varied activities were made by Dr. Theodore Gill, Dr. F. W. True, Dr. Aleš Hrdlička, Mr. Charles K. Wead and several others. Dr. Hrdlička read from the autobiography which Professor Mason had prepared several months before his death.

At the 424th regular meeting, on November 24, 1908, Dr. Aleš Hrdlička gave a synopsis of the results of his investigations among the various

Indian tribes of the United States for the International Congress on Tuberculosis.

Doctor Hrdlička visited the Winnebago, the northern Sioux, the Quinaielt, the Hupa and the Mohave tribes. Among all these peoples, Dr. Hrdlička describes the conditions as most appalling, giving rise to the belief that in a few years these tribes will be wasted to small remnants. The housing, food and personal habits are of the most primitive character, and there seems to be an utter disregard of all rules for the prevention of the spread of tuberculosis. Perhaps the most alarming conditions were found among the virile Sioux, who are rapidly succumbing to this dread disease. He held that in most cases the ultimate cause of the ravages of consumption among the Indians is due to the adoption of clothing, houses, food, etc., of the whites, and the lack of knowledge as to the communicability of disease.

The results of Dr. Hrdlička's researches will be published in the forthcoming report of the International Congress on Tuberculosis.

At the 425th regular meeting, on December 22, 1908, Dr. J. W. Fewkes read a paper illustrated with lantern slides on the excavation and repair work at Casa Grande, done by the Smithsonian Institution during the past two winters. The prehistoric settlement, of which Casa Grande is the best preserved building, was found to include several rectangular walled enclosures (compounds) in an area of several acres. Five of these compounds were excavated and repaired. Views were shown of mounds before excavation and others illustrated bird's-eye views of the same in their present condition.

The character of the repair work, especially the means adopted to preserve the walls from the elements was described and illustrated.

At the 426th regular meeting, on January 5, 1909, the following program was presented:

"Expedition to Sian-Fu, China, to Procure a Replica of the Nestorian Tablet," by Mr. Fritz Von Holm.

This tablet is dated A.D. 781 and contains an inscription of about 2,000 Syriac characters giving the part of Asia from which this body of Christians had come, a list of the benefits conferred on them by the Chinese emperors and other matters of historical importance. It was discovered in modern times in 1625 and set upon a stone pedestal in the shape of a turtle, but although visited occasionally, little care was taken of it until 1907, when the interest excited by Mr. Von